

REMARKS

Claims 1-7, 9-22 and 24-30 remain in the application. Claims 8, and 23 have been canceled. Claims 14 and 29 have been amended for clarity. Independent claim 1 has been amended to include the limitations of providing the substrate into a contamination removal chamber of a plating tool, annealing the substrate within the plating tool and depositing a conductive material on the substrate within the plating tool. Support for this amendment can be found on page 8, paragraph 32 of the present application, for example. Independent claim 8 has been amended to include the limitations of wherein the seed anneal chamber and the plating chamber comprise a plating tool. Support for this amendment can be found in FIG. 3b of the present application, for example. No new subject matter has been added with these amendments.

A. 35 U.S.C. § 103(a)

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Rozbicki in view of prior art- Claims 1-7 and 9-12

Claims 1-7 and 9-12 stand rejected under 35 U.S.C. § 103(a) as being anticipated by Rozbicki in view of Applicants admission of prior art (Office Action, page 2), claim 13 having been canceled. The Office relies on Rozbicki for a teaching of a seed layer disposed on a barrier

layer and forming a passivation layer over the seed layer. However, Rozbicki does not teach the limitations of annealing and depositing within in the same plating tool as recited in amended claim1, from which claims 2-7 and 9-12 depend.

“To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” In *re Royka*, 490 F.2d 981,180 USPQ 580 (CCPA 1974). Regarding claim 1, since neither Rozbicki nor admitted prior art, either alone or in combination, teach or suggest annealing and depositing in the same tool, claims 1-7 and 9-12 are not rendered obvious by Rozbicki in view of admitted prior art. Thus, reconsideration and withdrawal of the Section 103(a) rejection of claims 1-7 and 9-12 is respectfully requested.

Rozbicki in view of prior art and Liu- Claims 14, 20 and 21

Claims 14, 20 and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rozbicki over admitted prior art in view of Liu.

“To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” In *re Royka*, 490 F.2d 981,180 USPQ 580 (CCPA 1974). Regarding claim 1 (from which claims 14, 20 and 21 depend), claim 1 discloses annealing and depositing within the same plating tool. Neither Rozbicki, prior art nor Liu, either alone or in combination, teach or suggest annealing and depositing within the same tool. The Office has suggested that modifications to make a system integral are within the ordinary skill of the artisan (Office Action, page 10).

However, where there are “insights that are contrary to the understandings and expectations of the art, the court has held that claims were patentable.” *Schenk v. Nortron Corp.*, 713 F.2d 782,218 USPQ 698 (Fed. Cir. 1983) (see also MPEP § 2144.04). Annealing the

passivation layer is an entirely optional step performed by Rozbicki, while Liu performs a plasma clean (not an anneal) of oxidation (grown while outside of a processing tool) disposed on the seed layer. Intentionally growing a passivation layer on the seed layer while in a processing tool, and then annealing the passivation layer (as opposed to plasma cleaning) and depositing a conductive material on the seed layer in the same plating tool, as disclosed in claim 1 of the present invention, are contrary to the understandings and expectations of the art. Rozbicki discloses it is desirable to leave a small amount of copper oxide on the seed layer prior to electroplating (not removing the passivation layer), and Liu discloses plasma cleaning the copper oxide (grown on the seed layer while in atmosphere) prior to deposition.

Neither Rozbicki, prior art, nor Liu suggest or disclose the limitations of amended claim 1. In fact, amended claim 1 is contrary, i.e., different, than the prior art, since intentionally growing a passivation layer in one processing tool (as opposed to growing in atmosphere) and then annealing that passivation layer and subsequently depositing conductive material within a plating tool are different than the prior art.

Therefore, claims 14, 20 and 21 are not rendered obvious by Rozbicki in view of Liu and prior art. Thus, reconsideration and withdrawal of the Section 103(a) rejection of claims 14, 20 and 21 is respectfully requested.

Rozbicki in view Liu in further view of Nogami - Claims 15, 17 and 19

Claims 15, 17 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rozbicki in view of Liu and further in view of Nogami. However, since claims 15, 17 and 19 depend from a non-obvious claim as described above, they are not rendered obvious by Rozbicki

in view of in view of admitted prior art, Liu and Nogami. Thus, reconsideration and withdrawal of the Section 103(a) rejection of claims 15, 17 and 19 is respectfully requested.

Rozbicki in view of Liu, Nogami and Acuthan- Claims 16 and 18

Claims 16 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rozbicki in view of admitted prior art Liu, Nogami and the Acuthan. However, since claims 16 and 18 depend from a non-obvious claim as described above, they are not rendered obvious by Rozbicki in view of admitted prior art Liu, Nogami and Acuthan. Thus, reconsideration and withdrawal of the Section 103(a) rejection of claims 16 and 18 is respectfully requested.

Liu in view of Rozbicki- Claims 22, 28 and 30

Regarding claims 22 and 28, the Office contends that it would have been obvious to modify Liu with the teachings of Rozbicki, since Rozbicki teaches that annealing is a conventional step of removing the passivation layer. However, claims 22 and 28 (from which claim 30 depends) contain the limitations of annealing and depositing within the same plating tool. The Office has suggested that modifications to make a system integral are within the ordinary skill of the artisan (Office Action, page 10).

As described above, claims 22 and 28 and 30 are contrary, i.e., different, than the prior art, since intentionally growing a passivation layer in one processing tool (as opposed to growing in atmosphere) and then annealing that passivation layer and subsequently depositing conductive material within a plating tool are different than the prior art.

Thus, they are not rendered obvious by Liu in view of Rozbicki , and consequently reconsideration and withdrawal of the Section 103(a) rejection of claims 22, 28 and 30 is respectfully requested.

Liu in view of Rozbicki, Nogami and Cohen-Claims 23, 24 26 and 29

As described above, claims 22 and 28 (from which claims 23, 24, 26 and 29 depend respectively), are not rendered obvious by Lui in view of Rozbicki. Since Rozbicki, Lui, Cohen nor Nogami teach or suggest annealing and depositing in the same tool, claims 23, 24, 26 and 29 are not rendered obvious by Lui in view of Rozbicki, Cohen or Nogami. Thus, reconsideration and withdrawal of the Section 103(a) rejection of claims 23, 24, 26 and 29 is respectfully requested.

Liu in view of Rozbicki, Acuthan-Claims 25 and 27

As described above, claims 22 and 28 (from which claims 25 and 27 depend), are not rendered obvious by Lui in view of Rozbicki. Since Rozbicki, Lui, nor Acuthan teach or suggest annealing and depositing in the same tool, claims 25 and 27 are not rendered obvious by Lui in view of Rozbicki and Acuthan. Thus, reconsideration and withdrawal of the Section 103(a) rejection of claims 25 and 27 is respectfully requested.

In view of the foregoing remarks, the Applicants request allowance of the application. Please forward further communications to the address of record. If the Examiner needs to contact the below-signed Attorney to further the prosecution of the application, the contact number is (503) 264-0944.

Respectfully submitted,

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